

Future is No Variation (1990)

Quarterly Emerging Trends Report



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When we look out into the fog of the future, what do we see?

A world wracked by environmental disaster and geopolitical conflict or one with widespread prosperity?

Or some mix of both?

Do we imagine some eventual end to humankind or a future among the stars?

Anticipating the future by thinking deeply and broadly about what may come is central to strategic foresight. To do so effectively requires grappling directly with the uncertainty and complexity that mark the decision-making environment. Intelligence scanning, the act of identifying key trends and drivers, is no crystal ball. The picture of the future that is generated from this process is partial and variable; it is a snapshot of possibilities grounded on "weak signals."

The 20 emerging trends included in this report illustrate this variability and uncertainty. A new technology, for example, OpenAl's GPT-2 text prediction model, has the potential to transform several industries. It could also open the door for mass disinformation campaigns and advanced spam content. It could face harsh regulations or technical barriers, and uptake may be slow or nonexistent.

The way this trend might play out also depends on how it interacts with other developments such as the emergence of a universal basic income as a serious policy option. It is challenging to make sense of this complexity for even just a handful of issues, not to mention the future as a whole.

This report aims at stimulating the thinking of readers, to open minds to plausible futures rather than to make forecasts. The Futures Team has modified the format of The Future is Now to better meet this objective. Instead of including a small number of trends, this report covers 20 in diverse domains and their implications for Asia and the Pacific.

Beyond imagining the future, strategic foresight involves linking anticipation with action. Dr. Russell Ackoff, notable organization theorist and professor at the Wharton School of Business, wrote that "[he has] no interest in forecasting the future, only in creating it by acting appropriately in the present."

The Future is Now report is only one part of a larger organization-wide effort to develop strategic foresight and future-readiness for our member governments and countries. The APO is continuing to organize training-of-trainers projects in scenario planning and strategic foresight for government officials as well as conferences and workshops diving deeper into key emerging trends like disruptive technology or the future of work.

Some key initiatives for this year include the development of a Future-readiness Awards for organizations that demonstrate maturity in foresight processes and the development of a truly future-oriented measure of productivity, the Sustainable Productivity Index.

Our hope is that the APO can help its member countries to formulate better long-term strategies. The future will be shaped by how states, citizens, companies, and institutions handle these issues.

Dr. Santhi Kanoktanaporn Secretary-General Asian Productivity Organization March 2019

1-1 THE BILLIONAIRE BACKLASH



A 2019 report by Oxfam found that the wealth of more than 2,200 billionaires across the globe had increased by USD900 billion in the previous year, with a corresponding share of wealth reduction among the poorest half of the world's population. The top 26 richest people in the world now own the same wealth as the lowest 50% [1].

Cultural winds seem to be shifting against this extreme wealth disparity worldwide. In the USA, there are proposals by mainstream politicians to significantly increase tax rates on high incomes and individuals with high net worth [2]. Mainstream newspapers are debating whether billionaires should be abolished [3,4]. In the developing world, public discontent against the ultra-rich has grown. Scandals over *fuerdai*, the second-generation rich in PR China, as well as the "billionaire Raj" in India are covered frequently in national news [5,6].

The sharp rise in the number of billionaires results from a confluence of globalization, quick uptake of new technology, and government regulations favoring large corporations and capital [7]. Meanwhile, incomes have stagnated or fallen for large swathes of the poor and middle class, and public services have suffered from chronic underfunding. In many places, decent education and healthcare are a luxury that only the rich can afford.

Whether these are temporary situations or a sign of a long-term attitude change against economic elites is unclear. It remains to be seen if countries move to limit the gains of the ultra-rich, and if so, what the long-term impacts will be on innovation, production, and social equity.

1-2 FEAR OF AN EMPTY PLANET

The coming global population crisis has long been reported and discussed. As the population climbs to nine billion by 2050 and to 11 billion by 2100 according to UN estimates, our collective ability to feed, house, and clothe people will undergo immense strain [8]. Unchecked population growth is linked by "prophets of doom" to increasing poverty, food shortages, conflict, and environmental degradation.

However, an increasing number of demographers around the world, such as Darrell Bricker and John Ibbitson, now believe that the UN estimates are far too high [9]. More realistically, they claim the planet's population will peak at around nine billion between 2040 and 2060 and then continuously decline. The argument is that UN population forecasting models do not account for critical factors such as expansion of education for women and speed of urbanization. If this is true, the real long-term demographic challenge is not a population boom but a population bust, or a relentless, generation-after-generation contraction of human numbers.

There are early signals that changes in fertility rates are occurring faster than official estimates. Populations are in decline in around two dozen countries; by 2050 this may be three dozen. Much of this is in richer countries: Japan; the Republic of Korea; Spain; Italy; and most of Eastern Europe.

More significantly, the largest nations are poised to grow smaller. PR China will have a declining population in a few years, with Brazil and India following suit by 2050. Even India is expected to stabilize its population in a generation before starting to decline [10].

This could have a range of impacts. The future working population may struggle financially with larger tax burdens to cover healthcare and pensions for seniors. With shrinking and aging global populations, countries will be pressured to compete for immigrant workers [11].



SOCIAL EMERGING TRENDS



The problem of mass displacement is one of the major issues affecting countries around the world. As of the end of 2017, 68.5 million people had been forced to flee their homes, a record high following a trend that has continued for five years [12]. Many migrants and refugees are dying en route each year, and borders are closing to them all over the world.

There is not much confidence that conventional solutions such as local integration, resettlement, and return can address the challenge on the necessary scale. This is compounded by the likelihood that the number of refugees will increase sharply in the future from climate-related disasters and conflict between established and rising powers.

Exacerbating tensions have led to the rise of antiimmigrant political movements in many affluent countries where migrants have sought asylum or been resettled. These movements stem from concerns about links between immigrants and negative social outcomes like terrorism and crime, concerns over increased competition for jobs, and benefits from state welfare [13].

Looking beyond conventional solutions, some researchers, such as Oxford University Professor Robin Cohen, have proposed a nonterritorial transnational polity to be called "Refugia" [14]. This consists of a set of loosely connected self-governing units linking disparate refugee communities. Refugia would connect refugee camps and other communities, equipping them with initiatives like virtual assemblies and smart cards that enable identification, employment, and credit access [15]. Such an initiative could provide a more humane, sustainable remedy to continued mass displacement.

SOCIAL EMERGING TRENDS

1-4 THE ANTIVACCINE MOVEMENT

Recent years have seen a resurgence in global measles outbreaks linked to the antivaccine movement that has spread worldwide. In a recent report, the World Health Organization (WHO) has labeled this "vaccine hesitancy," the reluctance or refusal to vaccinate despite the availability of vaccines, as one of the 10 most significant global health risks of 2019 [16].

Ukraine saw the biggest surge in measles cases, with a 634% increase from 2017 to 2018. The Philippines, an APO member country, saw the second-largest increase during that time, with an increase of 548% [17]. Other countries affected include the USA, Japan, Costa Rica, and across Europe, often in areas where measles were thought to have been eradicated [18, 19, 20].

Several causes are thought to contribute to the spread of vaccine hesitancy. While fears of side effects from government-supported vaccinations have historical precedent, much of the contemporary anxiety on this issue stems from a now-discredited paper by Dr. Andrew Wakefield of the UK positing a link between measles, mumps, and rubella (MMR) vaccines and autism [21].

The diffusion of antivaccine beliefs appears linked to two broader developments. The first is a transformation in how people share information through the Internet and social media, which can supercharge confirmation bias. Second, the doubts concerning vaccines reflect a growing suspicion of institutions and expertise. Some governments are responding to these trends by turning to specialists and online personalities to spread accurate vaccine information and counter misinformation [22].

TECHNOLOGY EMERGING TRENDS

2-1 DEEPFAKES FOR TEXT

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OpenAI, a nonprofit artificial intelligence (AI) research company, has developed a new natural language model, GPT-2, that is claimed to be so good at generating text that it has high potential for malicious use. GPT-2 is fed text and asked to write a few sentences based on predictions of what should come next.

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GPT-2 can generate text without the common errors plaguing previous AI text generators, like forgetting the subject midway through a passage or producing awkward syntax in long sentences. GPT-2 achieved this breakthrough by being trained with a dataset of around 10 million articles, more than 15 times more and much broader than previous state-of-the-art models. GPT-2 also structures the text that is input, allowing it to perform tasks like translation and summarization better than other AI systems, even those specifically built for those tasks [23]. Large, general language models like GPT-2 could have significant societal impacts and many near-term applications. For example, systems like GPT-2 could be used to create AI writing assistants, improve unsupervised translation, and offer better speech recognition [24]. At the same time, these models could be used for malicious purposes as well including generating misleading news articles, impersonating others online, automating spam and phishing content, and automating abusive or fake social media content.

As a demonstration, OpenAI made a version of GPT-2 that could generate infinite positive or negative reviews of products. Because of this, OpenAI is not releasing the full model as a preemptive measure to reduce the abuse of this technology [25].

2-2 SLOWING AGING

The world's population is aging, with virtually every country in the world experiencing growth in the relative proportion and absolute number of the elderly [26]. This presents significant challenges to countries in terms of maintaining growth and citizens' well-being.

Aging populations could lead to an increase in government spending due to the rise in the demand for healthcare and pension payments [27]. Increases in government consumption can decrease aggregate productivity by shifting economic activity in more productive manufacturing sectors to the service sector. Fewer workers may mean that tax burdens are higher, resulting in disincentives to work and invest.

Rising healthcare costs and fewer workers present serious, long-term challenges to governments and firms. However, there have been extended efforts in the research community to slow and possibly reverse the effects of aging. This could mean reduced healthcare costs and, if coupled with changes in retirement policy, greater labor force participation by the elderly.

Recently, Osaka University researchers have extended the life span of flies and slowed aging by 20% [28]. A report in *Communications Biology* found that bone marrow transplants from young to older mice helped preserve memory and cognitive abilities compared with peers [29]. Startups pushing research into increasing human longevity, such as Human Longevity Inc., are also raising millions of dollars [30]. Focusing on "health span," rather than just life span, will help to mitigate the impact of aging populations on productivity. True breakthroughs may still be decades away but could prove to be one avenue for reducing demographic pressures.

2-3 REAL-TIME MACHINE TRANSLATION

Technological advances allow many to communicate instantaneously across the globe, facilitating commerce, creativity, and connection. One obstacle, however, is that people are still separated by language differences. Developments in real-time machine translation could break down obstacles to cross-cultural communication, although these technologies face several hurdles before they can offer universal comprehension.

Google now offers a real-time translation feature on all Google Assistant-optimized headphones and Android phones [<u>31</u>]. This feature covers 40 different languages, although it depends on Internet connectivity. Google's offering is just one of many in recent years, with Skype debuting its Live Translation feature in 2015 which is able to perform real-time translation between eight languages during a call [<u>32</u>]. Russian tech giant Yandex is building a machine translation system that is integrated into the messaging app Telegram [<u>33</u>]. This type of device relies on three technologies: voice recognition; machine translation; and speech synthesis [34]. The quality of translation depends on how advanced each of these models is and the context in which it is used. Currently, real-time translation is more fit for the consumer market, for example, in tourism where translation requests are usually straightforward. In legal or other technical contexts, even the most advanced translation models underperform human interpreters.

There are several obstacles to perfecting real-time machine translation. Speech recognition is not as advanced as text translation and it is affected by noise interference [35]. The training process for live speech becomes more expensive as it takes more data to recognize unfamiliar speech patterns. In addition, machine translation cannot always capture implicit meanings and linguistic norms that are central to human communication. Simply translating words and syntax is not sufficient for conveying conversational style.



2-4 NANOFIBERS AND SPACE ELEVATORS

A team of researchers from Beijing's Tsinghua University has developed a fiber that is strong enough to be used to construct a space elevator [36]. This nanofiber is made from carbon nanotubes, one of the strongest known materials. Just 1 cm³ of this fiber, which weighs only 1.6 g, does not break under the weight of more than 800 tons.

However, fabricating fibers from this material has been challenging as tensile strength becomes impaired by defects, impurities, and discontinuous lengths [37]. The Tsinghua team has managed to construct nanotube fibers that are defect free, with a strength far higher than other existing fibers.

This material makes the prospect of constructing a space elevator more feasible with tethers of the required strength. A space elevator could reduce the cost of putting people and cargo into orbit from roughly USD7,700 per kilo to as little as USD55 per kilo [38]. However, there are still several other engineering challenges. Dealing with space debris as well reentry complications are just two of the many issues involved in building a working space elevator.

This material is likely to have more immediate applications in energy storage. Superfast flywheels in mechanical batteries constructed from this material would have 40 times the energy density of a lithium battery. Other uses could be in manufacturing ballistic armor, aeronautics and astronautics, and high-end sports equipment. As the Tsinghua team aims to start mass production of this nanofiber, we may begin to see it in both specialized and everyday applications.

3-1 RISE OF THE "MINOTAUR" AND "BLITZSCALING"

Entrepreneurs, investors, and policymakers have long discussed "unicorns," a term for private startup companies valued at USD1 billion or more [39]. Now, there is talk of "minotaurs," coined by Axios to describe companies that have raised USD1 billion in funding [40]. Axios had identified 55 minotaurs as of 2019, with Alibaba, a Chinese multinational specializing in e-commerce, becoming the first in 2005. Other companies in this grouping include Ant Financial, Uber, WeWork, Juul, and SpaceX [41]. Altogether, these companies have raised more than USD150 billion.

The rise of the minotaur reflects a new form of investing and company building called "blitzscaling" exemplified by Japan's SoftBank. Blitzscaling involves rapidly building a company to serve a global market, with the goal of being a first mover at scale [42]. This strategy tends to be feasible only when companies exist in large markets with strong winner-takes-all dynamics. By focusing on rapid growth, such companies aim at building a monopoly and taking advantage of network effects [43]. However, some argue that this investment is highly speculative and starves other potentially productive businesses of investment. It is also, by nature, managerially inefficient and burns through capital quickly.

Backed by advanced communication technologies and infrastructure, new investment models like blitzscaling and rapidly growing companies like Uber or AirBnB may become more common in the coming decades.

ECONOMIC EMERGING TRENDS

3-2 MYTHS OF THE GIG ECONOMY?



The "gig economy" refers to the increasing number of workers who are independent contractors, rather than employees. Alan Krueger and Lawrence Katz of Princeton University and Harvard University, respectively, showed in a widely publicized study that workers in "alternative" work arrangements such as Uber drivers and other independent contractors had risen dramatically in the past decade [44]. Many predicted that these trends in work would extend around the world.

While long reported as a major trend in the labor market, there is some indication that the gig economy has not yet manifested in the way that economists and pundits expected. First, a recent US government survey found that the share of workers in the gig economy had decreased [45]. Economists reported that gig work had increased by only 1% or 2% since 2005 rather than the more than 5% reported earlier. Another study only found one sector, transportation services, where there was clear evidence of substantial and rapidly growing gig activity [46]. The supposed rise in gig employment reflected medium-term labor market conditions as people took on part-time work, as well as differences in survey design [47].

Other findings have challenged conventional understandings of the gig economy, such as the preference of millennials for part-time gig employment. A recent study by Jolley found that only 24% of millennials reported earning money from gig work and that the percentage of them with full-time careers had risen by 21% [48].

While the rise of the gig economy is still uncertain, the dramatic changes in transport services highlight the potential for rapid transformation.

ECONOMIC EMERGING TRENDS

3-3 THE RIGHT TO REPAIR MOVEMENT

Efforts to mobilize for the "right to repair" are gaining ground worldwide. This refers to government legislation that enables consumers to repair and modify their own devices, instead of manufacturers requiring consumers to use their dedicated repair services or void the product warranty [49].

This concept originally emerged in the USA, with the Motor Vehicle Owners' Right to Repair Act in 2012. The Repair Association (TRA) was founded the following year to extend this legislation to electronics. TRA was motivated to push back against what it saw as anticompetitive and restrictive practices, forcing consumers to go through only licensed vendors for repairs and limiting modifications. With electronic waste being the fastest-growing waste stream in the world, the Right to Repair movement is also one means to reduce that flow [50]. This movement was supported by the agriculture sector, as many farmers found they could not repair their own tractors and other equipment without using manufacturers' high-cost repair services [51].

Manufacturers argue that right to repair legislation compromises intellectual property rights and exposes consumers to safety risks. However, the Right to Repair movement has seen considerable progress in the EU, where a group of environment ministers developed a series of proposals, the EU Ecodesign Directive, mandating that manufacturers create fixable goods with higher quality standards [52]. As the movement builds momentum, it links to both a broader societal pushback against large agriculture and tech companies as well as increasing environmental consciousness.



3-4 MERGING WORK AND PLAY

Employee expectations, demographics, and work itself have changed during the past 30 years. One emerging practice in organizations is a growing focus on creating and cultivating a climate of fun. While work and play were kept largely separate in the past, job-seekers and workers now prefer employers that can fulfill needs beyond career stability and material reward. Firms can attract, retain, and get more out of their employees by incorporating elements of "gamification" and encouraging play.

There is an increasing body of evidence that a fun work environment improves employee and organizational performance and well-being. A fun work environment is associated with higher job satisfaction, reduced turnover, and better job performance [53]. One technology-driven means of bringing play into the workplace is through gamification, or incorporating game-design elements into the workplace [54]. These elements can motivate employees and increase their level of engagement by providing real-time feedback and transparency, while injecting a sense of competition and control in work.

The latest trends in this area involve using mixed reality, integration with social media, and increased personalization in a range of organizational functions including training, feedback, and marketing. One successful case is Deloitte's Online Leadership Academy, which increased the number of returning users of the service by 46.6% through gamification [55].

A range of game-design elements has been explored including badges, leaderboards, challenges, storytelling, and designing employee onboarding using a tutorial system [56]. Yu-kai Chou, an expert on gamification, suggested that it can have the largest impacts in industries characterized by mundane tasks such as healthcare, education, finance, wellness, and corporate governance [57].

ENVIRONMENTAL EMERGING TRENDS

4-1 BIODIVERSITY LOSS AND GLOBAL FOOD PRODUCTION

Global food production capacity is being destabilized by biodiversity loss, according to a UN study issued by the Food and Agriculture Organization (FAO) [58]. Scientists found evidence that natural ecosystems underpinning human diets are deteriorating as farms, cities, and factories use up land and generate pollution. Over the past two decades, around 20% of the earth's vegetated surface has become less productive based on environmental trends. There has been a loss of soil biodiversity, forests, grasslands, reefs, and mangroves. One-third of fishing grounds in the oceans are overharvested.

Perhaps most troubling is that pollinators such as birds, bats, and, most significantly, insects are threatened with extinction. According to the first worldwide review of insect decline, published in the journal *Biological Conservation*, humans are on track to wipe out insects out in a matter of decades [59]. The most endangered species are integral to ecosystem health and agriculture, acting as food sources for animals, replenishing soil, and pollinating food. These changes are thought to be difficult, if not impossible, to reverse.

The main culprit identified is land-use changes, related mainly to agriculture with deforestation. Other factors include overexploitation of water supplies, pollution, overharvesting, the spread of invasive species, and climate change [60]. Ocean acidification and overfishing are also affecting aquatic biodiversity, with stocks falling by nearly 5% in recent years [61]. In key fishing regions like the East China Sea and North Sea, losses have been as high as 35%.



4-2 BIOSEQUESTRATION AND SUPERPLANTS

It has long been accepted by a clear majority of scientists that climate change is driven by human activity [62]. Most recently, researchers from the US Lawrence Livermore National Laboratory found that the likelihood that current climate change derives from human activity is 99.99999% [63].

Greenhouse gases, most prominently carbon emissions, are the main culprits driving these changes. Efforts are underway to decarbonize the economy by reducing emissions and increasing energy efficiency. However, many analysts believe that to mitigate the most severe effects of climate change, it is necessary to capture carbon already in the atmosphere. Alongside trials of carbon capture and sequestration, plant-based solutions are being explored. For example, Australia aims to plant one billion trees by 2050 to help meet its Paris Agreement climate targets, contributing to the removal of 18 million tons of carbon [64]. Still, some scientists believe that there are large uncertainties about the extent to which forests cool or warm the climate [65].

Researchers at the Salk Institute are genetically engineering plants that are more efficient in capturing and storing carbon in their roots. The hope is that when planted on a large scale such plants could suck up enough carbon dioxide to slow down climate change [66]. The Salk team says that a prototype "ideal plant" could be produced within five years, with a large-scale rollout within a decade [67].



ENVIRONMENTAL EMERGING TRENDS

4-3 CLIMATE STRIKE FOR YOUTH MOVEMENT

Young voices are often left unheard when it comes to global issues, although a recent student movement has spread from Europe and is now prominent on the world stage. The movement's signature action has been to skip school on Fridays, causing the movement to be labeled the Fridays for Future movement. Students from over 100 different countries have protested the lack of action against climate change by political leaders [68]. This lack of action prevails despite reports by bodies like the Intergovernmental Panel on Climate Change stating that we only had 12 years to cut emissions to prevent substantial global temperature increases [69].

This movement was launched when a 15-year-old Swedish student, Greta Thunberg, stood outside the Swedish Parliament every Friday to protest her government's lack of action on climate issues [70]. She garnered worldwide attention when she was invited to address the UN Climate Conference in December 2018. There have been thousands of protest actions linked to Fridays for Future, involving hundreds of thousands of students. Students from across Western Europe, from the USA to Brazil and Chile, and from Australia to IR Iran, India, and Japan have joined.

This movement is not centrally organized, so strikers have made varying demands. For example, some groups want to lower the voting age so that younger generations can have more policy influence [71]. Others want to shut down coal mines. The shared theme among these strikers is a demand for governments to curb greenhouse gas emissions.

On 15 March 2019, volunteers using social media coordinated more than 2,000 events in 125 countries under the banner of Fridays for the Future [72].

4-4 Sponge Cities

By 2050, estimates suggest that around 64% of Asia's population will reside in cities [73]. To house this population adequately, most cities must rapidly innovate to build resilience against flooding, water shortages, and other climate change-related events. More than half of urban residents in Asia and the Pacific currently live in floodplains and low-lying coastal areas, including major cities such as Bangkok, Shenzhen, Ho Chi Minh City, and Kolkata. This proportion is expected to rise considerably over the next few decades.

"Sponge cities" are one concept in urban planning developed to address these emerging risks. Sponge cities are meant to absorb rainwater, allowing it to be naturally filtered by soil and replenish urban aquifers [74]. This water can then be extracted though wells, treated, and used for municipal water supplies. To develop sponge cities, a range of technologies and techniques is required to create the space needed to allow water to be absorbed instead of falling onto the impermeable concrete and asphalt that mark modern cities. Those requirements include more open green spaces, roads and buildings designed to be porous, water-saving and water-recycling processes, and green roofs that retain and filter rainwater.

PR China has piloted a sponge city program in 16 locations, backed by an Asian Development Bank loan of USD150 million [75]. It has since been expanded to 30 cities. By 2030, participants must ensure that 80% of their urban land includes sponge features. Other innovative urban water initiatives have been adopted in the USA, Singapore, and the Netherlands [76].



5-1 BUILDING SPACE LAW THE WOOMERA MANUAL

Nations have come to depend heavily on space and satellite technology in essential areas of transportation, communications, commerce, and health. The disruption of this infrastructure would have devastating effects on society. Rising geopolitical tensions and the congested and contested nature of outer space mean that the possibility of armed conflict in space is growing. One early signal is US President Trump's 2018 proposal that the country establish a dedicated military space force [77].

Currently, the laws that govern the use of force in space are far from clear. Existing international treaties governing space provide little regulation of modern activities. A better understanding of how these laws apply may help in conducting diplomacy and developing future treaties to prevent space-based conflicts. In pursuit of this goal, an international team of legal experts is developing a comprehensive manual that objectively articulates and clarifies existing international law applicable to military space operations called *The Woomera Manual on the International Law of Military Space Operations* [78]. This team includes experts from the University of Adelaide, University of New South Wales Canberra, University of Exeter, University of Nebraska School of Law, US Naval War College, and Xiamen University.

The project will be completed by 2020 and is targeted at policymakers, government lawyers, and military space operators. It follows the success of earlier manuals such as the San Remo Manual on International Law Applicable to Armed Conflict at Sea, Harvard Manual on International Law Applicable to Air and Missile Warfare, and Tallinn Manual on International Law Applicable to Cyber Operations [79].

5-2 MAINSTREAMING A UNIVERSAL BASIC INCOME?

A universal basic income (UBI) is an unconditional payment made to all individuals which is sufficient to protect them from poverty. While it is not a new idea, it has long been considered a fringe policy. Now, however, it is being debated in mainstream publications like *The Economist* and high-profile think tanks like the American Enterprise Institute [80,81]. Much of the recent surge of interest in UBI is a response to concerns about job losses from technological change. While many consider the policy unfeasible, it has been pilot tested in some countries.

The first results of those pilot tests are now being released, and UBI is being discussed as a serious policy option, even in developing countries. Overall, studies of basic income pilots indicate modest effects on labor market participation [82]. Meanwhile, there is evidence of positive effects on education participation and on other social and health outcomes.

The Finnish UBI experiment found that recipients had significant improvements in their sense of wellbeing [83]. Recipients were more optimistic, more interested in finding full-time work, and less stressed than peers on traditional unemployment benefits. India's main opposition Congress party declared that it will implement a variation of UBI if it wins the country's upcoming national election [84]. The Indian state of Sikkim also declared the intention to implement its own UBI scheme by 2022 [85]. Still, UBI is considered by most to be unfeasible given the tax burdens it would likely impose as well as worries that it would disincentivize work. Others see it as a way to abolish existing social programs.

As the risks of technological unemployment grow, more policymakers and analysts can be expected to embrace even seemingly radical policy ideas like UBI.



POLITICAL EMERGING TRENDS

5-3 CIVILIZATION STATES

Some commentators are reporting emerging signals of a new conception of the state, replacing the nation state that has been the predominant political unit of the past century [86]. This has been labeled "the civilization state," or a country that claims to represent a distinctive civilization. This idea is gaining ground in many nations such as PR China, India, Russia, Turkey, and the USA.

The nation state is tied to the idea of belonging based on a common culture and feelings of mutual obligation. In contrast, civilizations are argued to have stronger historical roots and are differentiated from each other by distinct understandings of rights and responsibilities, hierarchy, and authority [87]. Civilization states have the potential to be more disruptive to the existing US-led liberal order founded on nation states. The US-led order was largely based on the idea of convergence, in terms of political and economic organization, toward liberal democracy and free-market capitalism [88].

The growing conceptual acceptance of the civilization state implies that universal standards are mistaken, since each civilization needs institutions that reflect its history and culture [89]. Proponents of civilization states, like Zhang Weiwei of Fudan University, argue that their countries have succeeded because they have embraced their own unique traditions such as Confucian culture. Similarly, the BJP in India and Russian state intellectuals have embraced Hindu religion and Eurasian civilization, respectively.

If this model of statehood spreads further, it remains to be seen if it can coexist peacefully within the existing international system.



5-4 DRUG LIBERALIZATION

Attitudes and laws on drugs like cannabis, MDMA, psilocybin, and ketamine have become more liberal in many parts of the world. This has been driven in part by a growing body of evidence that these drugs have significant therapeutic benefits for a variety of mental and physical conditions.

The World Health Organization (WHO) has called for cannabis and cannabis resin to be removed from Schedule IV, the most restrictive category of a 1961 drug convention [90]. This has paralleled country and state-level liberalization in countries like Spain, the USA, and Uruguay [91].

Historically in Asia, the laws regarding cannabis use have been strict. Recently, there has been a countertrend toward legalization and decriminalization. Thailand became the first country in Southeast Asia to allow medical marijuana [92]. The Republic of Korea amended its Narcotics Control Act at the end of 2018, legalizing access to some medical marijuana products [93]. The legislatures of Malaysia and the Philippines have explored bills to legalize marijuana as well.

Cannabis and cannabis derivatives have been found to have therapeutic benefits in terms of relieving pain, nausea, anxiety, and sleep disorders, although not without some detrimental effects [94]. New brain-imaging technology and crowd-funded nonprofit research organizations have found therapeutic benefits of psychedelics in posttraumatic stress disorder, depression, and anxiety [95]. In Colorado and Oregon, ballot initiatives are underway to decriminalize psilocybin [96].

While there is enthusiasm among advocates concerning potential economic and health benefits, others are urging caution over the appropriate regulatory models and long-term social impacts of these policy changes [97,98].



WHAT DO THESE EMERGING TRENDS MEAN FOR THE ASIA-PACIFIC?

This report briefly explores a range of emerging trends that all have the potential to disrupt and transform our markets, governments, and societies in coming years. Based on this survey of trends, a few notable themes emerge. Central to many possible changes is the role of the Internet and social media in enabling people to communicate and coordinate at a pace and on a scale previously unimaginable.

Previous editions of this report series examined different ways that digital technology could empower the state, for example, to engage in mass surveillance. What is clear now is that technology also empowers people, helping them organize and take action.

The Fridays for Future and the Right to Repair movements showcase how online platforms enable citizens to tackle climate change and enhance consumers' rights. In the marketplace, investors and entrepreneurs can better coordinate to rapidly scale and take advantage of global markets.

At the same time, this enhanced ability to communicate allows for harmful ideas to spread, as the rise of antivaccine movements around the globe and subsequent measles outbreaks demonstrate. These developments have reached APO member countries, and governments will need to adjust how they relate to their citizens.

Another common theme among these trends is the widening awareness of serious, long-term

disruptions. Policymakers, researchers, and citizens are recognizing and responding to climate change, new digital technologies, and demographic pressures. While the nature of these challenges has become clearer in recent years, due in large part because of concerted research efforts and attention, there is much we still do not know.

There is a great deal of uncertainty regarding the trends themselves and how they might interact. Breakthroughs in natural language models may open up the possibility of productivity leaps but also of technological unemployment. The rise of civilization states may ease the way for universal welfare schemes based on shared identity. This could also prove an obstacle to efforts to protect refugees around the world.

People are exploring a range of possible solutions to these issues, ranging from developing superplants to a transnational polity for refugees. What seems obvious is that no single solution exists for any of these complex challenges. Another lesson that member governments can take is to avoid thinking that "silver-bullet" solutions exist. More likely, organizations must try many different approaches and find the ones that fit best with the unique circumstances of the country. Asia-Pacific countries are taking the lead on many of these fronts, from piloting sponge cities and UBI to developing ways to reverse the effects of aging.

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